

MICROPROCESSOR CONTROLLED KEYBOARD

5.25 4 CHANNEL FLOPPY DISK CONTROLLER.

The Micro Processor controlled keyboard is a state of the art high performance data entry device. This unique keyboard features an 8 bit microprocessor based multiple key buffer system, keyboard microprocessor based multiple key function keys, and a built in cursor control system. All keys are debounced by the keyboard's own microprocessor. The keyboard has 4 level codics, 81 level codics, and a built in cursor control. There are 81 keys in the standard QWERTY arrangement and the 116 function keys are a standard 101 key layout. The switch contacts are front sealed and therefore have hundred thousand cycles of life. There is no wear on the contacts. The top row of keys have been customized for the Z-2000 system. The second row of keys is standard. The third row of keys is for the special function keys. The fourth row of keys is for the Z-2000 edition. Also included in the keyboard is a piezo transducer that clicks each time a key has been depressed to give the user a positive entry response.

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The B231 Arithmetic Processor is an integral part of the high speed graphics capabilities and is an option costing several hundred dollars on other Cadwell computers. It has up to 1000 words of memory and is therefore essential for producing complex graphics simulations.

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- FIXED POINT SINGLE AND DOUBLE PRECISION. (16/32 bit)
- FLOATING POINT SINGLE PRECISION. (32 bit)
- FULL BINARY DATA FORMATS.
- ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION.
- TRIGONOMETRIC AND INVERSE TRIGONOMETRIC FUNCTIONS.
- SQUARE ROOTS, LOGARITHMS, EXPONENTIATION.
- FLOAT TO FIXED AND FIXED TO FLOAT CONVERSIONS.

Fortunately all of the above mathematical formulas are executed transparently to the user and are completely controlled by the N-Channel software. This device has been manufactured using the most advanced N-Channel Silicon Gate Technology and therefore is extremely fast and reliable.

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The W3270/1-25 Floppy Disk Controller/Formatter from Western Digital is the latest in floppy disk technology. This controller contains a digital data separator and write precompensation circuitry to insure optimum data integrity to and from the disk. This 5.25 floppy disk controller is capable of driving up to 4 disk drives in either single or double density. The total amount of memory capable of being accessed in double density mode with the 1MB/FW format would be approximately 3/4 of a million bytes.

POWER SUPPLY FEATURES: The user manual power section will include 1 switched 120v 3 prong grounded outlet and one high batch power outlet. The **Bally Attacked** will be built in and will be a separate unit on and off with the User manual. The front panel on the **Bally Attacked** unit is illustrated for your convenience. The front panel is a good quick reference to insure whether the User manual is on or off. Because low voltage and power spikes can cause a computer to intermittently fail the User manual has a specially designed microprocessor power transformer that is capable of operating at 110/100V. To help protect the User manual spikes well below 110V. The User manual includes high efficiency RF/EMI AC line filter with fuse circuit protection and the addition of a **MuO₃** (metal oxide varistor) for

AUDIO MIXING AND STEREO OUTPUTS.

3.25 4 CHANNEL FLOPPY DISK CONTROLLER.

The UH170V, 5.25" Floppy Disk Controller/Formatter from Western Digital is a high performance disk controller with built-in 5.25" floppy disk drives. It is designed to be used in some of the most advanced microcomputer systems. It is designed to insure optimum data integrity and from the disk controller. This 5.25" floppy disk controller is capable of driving up to 4 disk drives in either single or double density. The total amount of data that can be stored on the disk is approximately 3.4 MB. The UH170V, 5.25" Floppy Disk Controller/Formatter from Western Digital is programmed for double density data formatting in order to set the most memory storage per disk. Although this floppy disk controller is a custom version of the UH170 disk drives it maintains complete compatibility with its predecessor and the UH170N format.

ANNOUNCING THE ADD-ON LEVEL THREE, AND UNDER

ALTERNATIVE ENGINEERING CORP.

P.O. BOX 128, GARDNER, MINNE 04345
P.O. BOX 128, GARDNER, MINNE 04345
THE VIPER-ZGRASS SYSTEM

With over 10 years of custom software development plus the most advanced hardware features ever offered on a home computer, the Viper Z-grass system has become the most powerful, yet affordable Video Image Processor on the consumer market. This unique system together with the Bell/Astrocode Professional Arcade has a total of 8 microprocessing devices including 4 transistors, 4 chips and custom arcade graphic processors, used to make such video games as Asteroids, Asteroid Ball, Asteroid Ball/Holiday, Asteroid Ball/Space Invaders and Asteroid Ball/Space Invaders and many more. Unlike the other home computer systems, the Viper Z-grass is a true computer system especially designed for writing video games. It makes it easy to create quality games with artstic graphics and beautiful color images on your TV without having to have years of experience in computer programming.

SYSTEM FEATURES:

1. 64K 200ns DYNAMIC RAM MEMORY FOR PROGRAMMING.
2. 32K CUSTOM Z-GRASS REAL TIME OPERATING SYSTEM.
3. DUAL RS232 BI-DIRECTIONAL COMMUNICATIONS PORTS.
4. 8088 MICROPROCESSOR CONTROLLED KEYBOARD WITH 1K ROM DECODER.
5. 8085 F.T.M. BI KEY COMPUTER DESIGNED KEYBOARD WITH KEYPAD.
6. PIEZO ELECTRIC KEY CLICK FOR AUDIBLE KEYBOARD FEEDBACK.
7. 8231 HIGH SPEED ARITHMETIC PROCESSOR UNIT.
8. DUAL 2000 BAUD CASSETTE INTERFACE PORTS WITH MOTOR CONTROL.
9. 4 CHANNEL DOUBLE DENSITY 5.25 FLOPPY DISK CONTROLLER.
10. RFI/EMI FILTER WITH PLUG IN CORD AND BUILT IN FUSE.
11. FULLY REGULATED DC POWER SUPPLIES 5V/12V/12V.
12. REAR PANEL JACK FOR REMOTE KEYBOARD OPTION.
13. EXPANDABLE TO HIGH RESOLUTION GRAPHICS (1320x204 COLOR)
14. MEMORY EXPANDABLE UP TO 256K WITH THE HIGH RES. OPTION.
15. COMPATIBLE WITH CP/M OPERATING SYSTEMS.
16. STEREO OUTPUT JACKS FOR THE 3 OCTAVE MUSIC SYNTHESIZER.

Z-GRASS THE LANGUAGE.

The Z-GRASS software includes these advanced functions:

1. A FULL SCREEN TEXT EDITOR FOR FAST EFFICIENT PROGRAM EDITING.
2. STRING MANIPULATION INCLUDING MATCH, CONCATENATION, REPLACEMENT.
3. PROGRAM EXECUTION IN BOTH INTERPRETED AND COMPILED MODES.
4. MULTIDIMENSIONAL ARRAYS AND STRING ARRAYS.
5. USER CUSTOMIZATION OF LANGUAGE AT SEVERAL LEVELS.
6. ADVANCED GRAPHICS COMMANDS:
- SHRINK, TEXT, ELLIPSE, SHAPE, SHOW, ROTATE, SCALE, PATTERN, STRIKE, POINT.
7. 6 USER DEFINABLE KEYS FOR SPECIAL OR REPETITIVE FUNCTIONS.
8. OVER THIRTY SPECIAL CONTROL KEY COMMANDS WITH MULTIPLE MODES.

This is only a partial list of all the commands that are included in the 32K of Z-GRASS software. It takes over 100 pages of the Z-GRASS manual to describe all the commands and how to use them. Also included in the Z-GRASS manual are 10 lessons in modules programing with Z-GRASS. Plus information on 11 Z-GRASS modules that can be bought on tape or cassette. These modules allow the user to set new Z-GRASS commands as they become available.

DUAL RS232 COMMUNICATIONS PORTS.

The RS232-C dual channel communications ports allow your Viper to communicate with the outside world. These ports can be used with a wide variety of the latest in communications equipment. 300, 1200, 2400, 4800, 9600, 19200, 38400, 76800, 153600, 307200, 614400, 1228800 and 2457600 baud. The following devices can be used with these ports.

1. PRINTER, DOT MATRIX OR LETTER QUALITY.
2. BIT MAP GRAPHICS DIGITIZERS.
3. VOICE SYNTHESIZERS.
4. TELEPHONE MODEMS.
5. REMOTE APPLIANCE CONTROLLERS.
6. COMPUTER TERMINALS.
7. OTHER Z-GRASS COMPUTER SYSTEMS.
8. REMOTE KEYBOARDS.

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HERE IS ONE PAGE OF THE AVAILABLE COMMANDS:

What about software (i.e., programs)?

There is a large amount of programming that was created as a result of Dr. DeFanti's academic work. The ARCADIAW has been contacting some of his students to determine their interest in providing programs and tutorials. In addition,

Viper Engineering is placing the first few machines in the hands of other programmers, to get the software ball rolling. The operating system is essentially the same as has been used in the DATAMAK UV-1, so that programming base can be tapped.

Robert Fabris
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San Jose, CA 95127

NEWS of Astrocade

Now that you've read the manufacturer's prose about the Zgrass memory unit, here are a few words of background...

When the Astrocade company went to the courts to seek relief under the bankruptcy statutes last December, the Alternative Engineering people decided that the time had come for a third party to produce the memory addition. We were in a similar frame of mind a couple of year's previously, but the planned deal with Fidelity Electronics gave us pause (of course, that fell through, but then Astrocade took over and promised the addition). At any rate, Dr. DeFanti was contacted, and an arrangement was made for the use of the 32K Zgrass language. Jeff Frederiksen was then asked to assist in the project. The combined talents of these gentlemen have produced the item of hardware whose specifications you have just read.

This letter is being sent to all of those ARCIADIAN subscribers who ever indicated some interest in the memory addition. By returning the order form, you will receive your unit at the earliest possible time, and at the best available price. The list price for the unit will be set at the end of this month - August - and it will be commensurate with the features included. This list price is expected to be on the order of that which has been discussed many times. Since the product is not now available, we are taking deposits only on the following basis... Send a check, money order, money will be held without cashing until the actual price has been determined. At that time we will notify you, giving you the opportunity to change your mind. We will return your deposit if you so desire, or cash the deposit. When the delivery date has been selected, we will contact you for the additional money.

ALSO NOW AVAILABLE, 3 PLUG-IN CARTRIDGES

TREASURE COVE A mild little thriller requiring you to collect treasures from the bottom of the sea, while avoiding the denizens of the deep.

BLASTIDROIDS An exciting asteroid-type laser shoot-em-up that requires more dexterity and skill than the original.

MUNCHER The P-C M-N thing that Bally/Astrocade never brought out...

AND You should be finding Astrocade's SOLAR CONQUEROR and COSMIC RAIDERS at your favorite dealer of Astrocade products.

DATE: _____

TO USE VISA OR MASTERCHARGE

PLEASE FILL IN YOUR CARD NUMBER

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EXPIRATION DATE M/C-BANK NUMBER

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SIGNATURE AS ON CARD:

• Each of the above three cartridges is \$30, postpaid (can \$36). Canadian orders can be filled using Canadian currency - make checks out to Robert Fabris.

California customers please add \$1.92 tax.